

KEY TO THE DESERT ANTS OF CALIFORNIA.

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Snelling and George (1979) surveyed the Mojave and Colorado Deserts including the southern ends of the Owen's Valley and Death Valley. They excluded the Pinyon/Juniper woodlands and higher elevation plant communities. I have included the same geographical region but also the ants that occur at higher elevations in the desert mountains including the Chuckwalla, Granites, Providence, New York and Clark ranges.

Snelling, R and C. George, 1979. The Taxonomy, Distribution and Ecology of California Desert Ants. Report to Calif. Desert Plan Program. Bureau of Land Mgmt.

Their keys are substantially modified in the light of more recent literature. Some of the keys include species whose ranges are not known to extend into the deserts. Names of species known to occur in the Mojave or Colorado deserts are colored red. I would appreciate being informed if you find errors or can suggest changes or additions.

Key to the Subfamilies.

WORKERS AND FEMALES.

- 1a. Petiole two-segmented.2
- b. Petiole one-segmented.4
- 2a. Frontal carinae narrow, not expanded laterally, antennal sockets fully exposed in frontal view.3
- b. Frontal carinae expanded laterally, antennal sockets partially or fully covered in frontal view. Myrmicinae, p 4
- 3a. Eye very large and covering much of side of head, consisting of hundreds of ommatidia; thorax of female with flight sclerites. Pseudomyrmecinae, p 2
- b. Eye absent or vestigial and consist of a single ommatidium; thorax of female without flight sclerites.Ecitoninae, p 2
- 4a. Gaster without constriction between first and second segments; functional sting absent.5
- b. Gaster constricted between first and second segments; sting present, functional.Ponerinae, p 2
- 5a. Acidopore present, terminal, circular and usually with a fringe of setae; petiole usually erect and scale-like.
.....Formicinae, p 19
- b. Acidopore absent, gaster with preapical, ventral anal slit; petiole often low and strongly inclined. Dolichoderinae, p 17

MALES.

- 1a. Petiole two-segmented.2
- b. Petiole one-segmented.3
- 2a. Clypeus not extending back between frontal carinae; eye large, elongate, subreniform; antenna 12-segmented; Mayrian furrows absent.Pseudomyrmecinae, p 2

- b. Clypeus extending back between frontal carinae; eye often large, but usually more or less hemispherical; antenna 10-13 segmented; Mayrian furrows often present.Myrmicinae, p 4
- 3a. Gaster not constricted between first and second segments; mandible usually well-developed.4
- b. Gaster constricted between first and second segments; mandible poorly developed.Ponerinae, p 2
- 4a. Hypopygium with 3 apical teeth; mandibles always prominent, elongate and rather broad or distinctly sickle-shaped, never short and triangular; gaster elongate-cylindrical.Ecitoninae, p 2
- b. Hypopygium entire or emarginated, but without distinct apical teeth; mandibles poorly developed or short and triangular; gaster more or less triangular, with apical segments distinctly telescoped.5
- 5a. Scape short, SL less than combined lengths of next four segments; anterior tentorial pit at or above level of lower margin of antennal socket; petiolar scale usually low and strongly inclined; head, in profile, often strongly flattened.Dolichoderinae, p 16
- b. Scape elongate, SL equals or exceeds combined lengths of next five segments; anterior tentorial pit distinctly below level of lower margin of antennal socket (except *Brachymyrmex*); petiolar scale usually fully erect; head, in profile, not strongly flattened.Formicinae, p 17

PONERINAE

- 1a. Eye, when present, small, occupying less than one-fourth of side of head in lateral view; antenna 12-segmented; sting present, usually exerted (females and workers).2
- b. Eye large, occupying most of side of head in lateral view; antenna 13-segmented; sting absent (males).5
- 2a. Pygidium without row of stout setae on either side; occipital and scrobal carinae absent.*Hypoponera*.....3
- b. Pygidium with a row of coarse, erect spine-like setae on each side, convergent toward apex; occipital and scrobal carinae present.*Cerapachys*
- 3a. Body black.*H. opaciceps*
- b. Body brown.4
- 4a. Punctations on frons large; surface shiny.*H. CA-01*
- b. Punctations on frons smaller; surface dull.*H. opacior*
- 5a. Node of petiole, in profile, triangular, sharply differentiated from gaster; forewing, when present, with closed submarginal, marginal and two discoidal cells. *Hypoponera*
- b. Node of petiole, in profile, low, quadrate, not sharply set off from gaster; forewing with open or weakly closed submarginal cell and one discoidal cell.*Cerapachys*

***Cerapachys*.** The genus is represented by a single species, *Cerapachys davis*. Males appear at lights in the low desert.

PSEUDOMYRMECINAE

There are two species in the genus *Pseudomyrmex* in Southern California. This key is modified from;

Ward, PS 1985. The Nearctic Species of the genus *Pseudomyrmex* (Hymenoptera: Formicidae). Quaestiones Entomologicae 21: 209-246.

REL = EL/HL. RES2 = EL/HW. SI2 = SL/EL. CI = HW/HL.

Workers

- 1a. Eyes short (REL = 0.39-0.44). Scape length subequal to EL (SI = 0.9-1.0).*P. apache*
 b. Eyes longer (REL = 0.45-0.54). Scape length shorter than EL (SI = .068-0.86).*P. pallidus*

Females

- 1a. Larger (HW = 0.85-1.03, HL = 1.28-1.46); Eyes relatively short (REL2 = 0.52-0.58).*P. apache*
 b. Smaller (HW = 0.66-0.92, HL = 0.82-1.15). Eyes longer (REL2 = 0.59-0.71).*P. pallidus*

Males (*Pseudomyrmex*)

- 1a. Head broader (CI > 0.80) and not densely punctate, Eyes shorter, EL about half head width (REL2 = 0.50-0.57).
*P. apache*
 b. Head elongate (CI < 0.80) and upper half densely punctate, Eyes relatively longer, EL about ¾ head width (REL2 = 0.71-0.83). *P. pallidus*

ECITONINAE

The army ants in the desert region of California are represented only by the genus *Neivamyrmex*, containing six species. Most are very poorly known within our area. Males are commonly attracted to lights. Workers are, as a rule, collected at night when the foraging or emigration columns may be found in rocky canyons and washes. Rarely is a bivouacked colony located. Some species, such as *N. leonardi*, are probably wholly subterranean.

WORKERS.

- 1a. Node of petiole, from above, elongate, clearly longer than broad; largest workers more than 5 mm long.....2
 b. Node of petiole, from above, stout, about as broad as long; largest workers 3-4 mm long.7
 2a(l). Head more or less shiny, not densely sculptured and opaque; at least side of pronotum usually distinctly shiny. ...3
 b. Head and mesosoma opaque, densely and often coarsely sculptured *nigrescens* ("Shiny form") (part)
 3a(2). Basal margin of mandible evenly curved into masticatory margin, without a tooth or corner at their junction.4
 b. Basal margin of mandible straight, forming distinct tooth or angle with masticatory margin.5
 4a(3). Dorsal surface of propodeum distinctly depressed below level of mesonotum; metafemur long, 6.4 x as long as deep.*nigrescens* (Cresson) (part)
 b. Dorsal surface of propodeum not distinctly depressed; metafemur shorter, 5.2 x as long as deep. .. *californicus* (Mayr)
 5a(3). Head and mesosoma largely or entirely conspicuously roughened and opaque or semiopaque; head relatively broad.*opacithorax* (Mayr)
 b. Head and mesosoma smooth and shiny, with only occasional indications of sculpturing on mesosoma; head relatively narrow.6
 6a(5). Scape short and stout, not evenly tapered basad.*wilsoni* Snelling & Snelling

b. Scape long and slender (about 3x as long as broad), gradually tapering basad.*nyensis* Watkins

7a(1). Small species, HW not exceeding 1.0 mm; frontal carina complete, forming broad lamella below antennal socket; dorsal surface of propodeum at least as long as declivitous face; anteroventral tooth of petiole present but weak.

..... *leonardi* (Wheeler)

b. Larger species, HW at least 1.0 mm; frontal carina abruptly narrowed below, not forming lamella below antennal socket; dorsal face of propodeum distinctly shorter than declivitous face; anteroventral tooth of petiole usually well developed and with posterior lamella. *swainsonii* (Shuckard)

MALES (Ecitoninae).

1a. Mandible sickle-shaped.2

b. Mandible not sickle-shaped.5

2a(1). Small, slender species, length 8-9 mm.3

b. Large, robust species, length 11-13 mm.*swainsonii*

3a(2). Lateral ocelli not on prominent raised area and OOD greater than OD.4

b. Lateral ocelli on raised area distinctly above level of rest of head and OOD less than 0.50 x OD.*minor*

4a(3). Robust species; head and body dark charcoal grey; apical fork of volsella with one to several small teeth along inner margin.*microps*

b. More slender species; head and mesosoma blackish, gaster reddish brown; apical fork of volsella without teeth along inner margin. *mojave*

5a(4). From above, dorsal surface of head forming distinct ridges over antennal sockets; mesosomal dorsum subopaque to opaque. *nigrescens*

b. From above, dorsal surface of head rounded, not forming distinct ridges over antennal sockets; Mesosomal dorsum moderately shiny.*opacithorax*

(*N. microps* and *N. opacithorax* are included here as they may be present within our area, at least marginally.)

Source. Snelling & George. California Desert Ants. www.desertants.org/ecitoninae/eivamyrmex.html

MYRMICINAE

WORKERS

1a. Dorsal surfaces with at least a few conspicuous erect hairs.2

b. Dorsal surfaces of head and thorax without erect hairs.*Cardiocondyla*, p 7

2a. Postpetiole attached anteriorly on gaster; gaster subcircular in dorsal view, in lateral view about equally convex above and below.3

b. Postpetiole attached anterodorsally on gaster; gaster subcordate in dorsal view; in lateral view, flattened or slightly concave above and strongly convex below.*Crematogaster*, p 7

3a. Antenna 11- or 12-segmented; propodeum often bispinose.5

b. Antenna less than 11-segmented.4

4a. Antenna 6-segmented, propodeum with angulate to dentate spines.	<i>Pyramica</i> , p 16
b. Antenna 10-segmented, with a distinct 2-segmented club; propodeum without spines.	<i>Solenopsis</i> , p 16
5a. Antenna 11-segmented.	6
b. Antenna 12-segmented.	7
6a. Frontal carinae projecting over clypeus and concealing most or all of its lateral areas; thoracic dorsum with bosses or ridges.	<i>Cyphomyrmex</i> , p 8
b. Frontal carinae not projecting over clypeus; thoracic dorsum conspicuously spinose.	<i>Acromyrmex</i> , p 7
7a. Spurs of middle and hind tibiae, when present, simple; thoracic sutures often present on dorsum; thorax, in profile, often impressed between mesonotum and propodeum; psammophore usually absent.	8
b. Spurs of middle and hind tibiae pectinate; thoracic sutures usually obsolete or absent on dorsum; psammophore usually present, fully developed.	13
8a. Suture between mesonotum and propodeum distinctly impressed; propodeum depressed well below level of pronotum, mesonotum forming a sloping or stepped declivity between.	9
b. Suture between mesonotum and propodeum not impressed, mesonotum and propodeum forming a continuous slope behind pronotum or a single long, more or less flat surface.	12
9a. Propodeum spinose or at least sharply angulate at juncture of basal and posterior faces, basal face often sharply depressed below level of mesonotum.	10
b. Propodeum not spinose or angulate, basal face on same level as mesonotum.	<i>Monomorium</i> , p 8
10a. Postpetiole strongly constricted behind, node distinct and sharply set off from posterior peduncle; head longer than broad often much narrower above eyes than in front; psammophore usually absent.	11
b. Postpetiole weakly constricted behind, node low and not sharply set off from thick posterior peduncle; head subquadrate, not notably narrower above eyes; psammophore usually present and conspicuous (if not, base of scape is flared and trumpet-like).	<i>Messor</i> , p 8
11a. Antennal club 4- or 5-segmented, each segment not much longer than the other flagellar segments; 3 terminal segments combined much shorter than remainder of flagellum; propodeal spines reduced to angles; HW at least 0.80 mm; monomorphic.	<i>Aphaenogaster</i> , p 7
b. Antennal club 3-segmented, each segment about twice longer than other flagellar segments; three terminal segments combined much longer than remainder of flagellum (one species, <i>clydei</i> , with 4-segmented club, has exceptionally long propodeal spines); propodeal spines usually distinct, rarely dentiform; dimorphic, majors with pronounced occipital lobes, minors with HW less than 0.80 mm.	<i>Pheidole</i> , p 9
c. Antennal club 4-segmented, terminal three segments much longer than the other flagellar segments; three terminal segments combined about equal to remainder of flagellum; monomorphic.	<i>Stenamma</i> , p 17
12a. Small, length less than 5 mm; thoracic dorsum flat or feebly convex in profile; antennal scape barely, if at all, surpassing occipital margin.	14
b. Large, length more than 10 mm; propodeum well below level of pronotum, mesonotum forming a long sloping surface between; antennal scape projecting well beyond occipital margin.	<i>Aphaenogaster</i> , p 7
13a. Thoracic sutures absent or obsolescent on dorsum, no depression, or a weak one, between mesonotum and propodeum; psammophore distinct or, if obsolete, propodeum bispinose.	<i>Pogonomyrmex</i> , p 14

b. Thoracic sutures distinct; deep depression between mesonotum and propodeum; psammophore absent; propodeum without spines. *Manica*, p8

14a. Frontal carinae extending almost to the posterior margin of head; entire face covered by coarse, widely spaced rugae. *Tetramorium*, p 17

b. Frontal carinae very short or absent; facial rugae finer and may not extend over the posterior half of face.

..... *Temnothorax*, p 17

MALES (Myrmicinae)

1a. Erect body hairs more or less numerous; wings present; antenna 12- or 13-segmented.....2

b. Erect body hairs absent except a few at apex of gaster; apterous; antenna 12-segmented. *Cardiocondyla*

2a. Antenna 12-segmented.3

b. Antenna 13-segmented.5

3a. Postpetiole attached to anterior face of gaster; gaster not subcordate in dorsal view; flagellum moniliform.4

b. Postpetiole attached anterodorsally on first gastric segment; gaster subcordate in dorsal view; flagellar segments somewhat bead-like. *Crematogaster*

4a. First flagellar segment annular or globular; no Mayrian furrows; ocellar area strongly elevated above vertex.

..... *Solenopsis*

b. First flagellar segment not annular or globular; Mayrian furrows present; ocellar area not elevated. *Temnothorax*

5a. Scape about as long as first 8 flagellar segments combined; Mayrian furrows present.6

b. Scape no longer than first 4 flagellar segments combined; Mayrian furrows present or absent.7

6a. Dorsal surface of first gastric segment with median impression and laterobasal impression on each side; frontal carinae not greatly expanded; length over 7 mm. *Acromyrmex*

b. Dorsal surface of first gastric segment without distinct impressions; frontal carinae greatly expanded; length less than 3 mm. *Cyphomyrmex*

7a. Middle and hind tibial spurs simple; Mayrian furrows usually present and distinct; body hairs sparse.8

b. Middle and hind tibial spurs distinctly pectinate; Mayrian furrows usually absent, or weakly developed when present; body hairs often abundant, usually long, flexuous.12

8a. Head, in profile, not flattened; propodeum, in profile, rounded and not unusually depressed; forewing with 1 or 2 closed cubital cells.9

b. Head, in profile, unusually flattened; propodeum abruptly depressed below mesothorax in profile, basal face long; forewing with 2 closed cubital cells. *Aphaenogaster*

9a. Forewing with 1 closed cubital cell; scape usually as long as first 3 or 4 flagellar segments; ocelli small, ocellar area not strongly elevated above vertex.10

b. Forewing with 2 closed cubital cells; scape about as long as first 2 flagellar segments, first somewhat annular or globular; ocelli large, ocellar area strongly elevated. *Pheidole*

10a. Length 6 mm or more; Mayrian furrows present but weak; scape at least as long as first 3 flagellar segments combined.	11
b. Length less than 5 mm; no Mayrian furrows; scape about as long as first 2 flagellar segments combined.	<i>Monomorium</i>
11a. Head narrow dorsoventrally, moderately convex above, flattened beneath; occipital margin slightly constricted to form a weak flange; legs unusually long and slender.	<i>Aphaenogaster</i>
b. Head moderately convex dorsally and ventrally; occipital margin not constricted; legs normal.	<i>Messor</i>
12a. Mayrian furrows well developed; body hairs short, stiff; mandible with more than 10 teeth; antennal scape no longer than following 2 segments combined.	<i>Manica</i>
b. Mayrian furrows absent; body hairs almost always long, slender flexuous; mandible with fewer than 8 teeth; scape (except <i>P. imberbicus</i>) longer than following 3 segments combined.	<i>Pogonomyrmex</i>

***Acromyrmex*.**

This Neotropical genus is represented by a single species, *Acromyrmex versicolor*. It is our only leaf-cutter ant and can't be confused with any other of our desert ants due to its extreme spyness.

***Aphaenogaster*.**

WORKERS.

1a. Large ants (10-12 mm long); scape projecting well beyond occipital border; thoracic dorsum with meso-epinotal suture faint or absent.	<i>A. cockerelli</i>
b. Smaller ants (not more than 4 mm long); scape never projecting much beyond occipital border; thoracic dorsum with meso-epinotal suture well marked.	2
2a. Head and thorax strong brown, gaster brown; dorsum of epinotum with prominent transverse rugae adjacent to meso-epinotal suture; remainder of epinotum coarsely punctate; occipital flange large and prominent.	<i>A. boulderensis</i>
b. Concolorous white to bicolored with head and thorax very pale brown, gaster light yellowish brown; entire epinotum delicately punctate, without rugae; occipital flange poorly developed.	<i>A. megommata</i>

***Cardiocondyla*.** In the deserts the genus is represented by one introduced species, *Cardiocondyla mauritanica* (=extopia), collected at lights at El Centro in the Low Desert. It occurs in urban areas and can invade sites occupied by the Argentine Ant, *Linepithema humile*.

Crematogaster

WORKERS only.

1a. Thoracic dorsum without erect hairs; thoracic integument closely and uniformly punctate, rugulae obscure or absent on promesonotum and promesopleura.	2
b. Thoracic dorsum with at least a single long erect hair on each pronotal humerus; thoracic integument, especially promesonotum, distinctly rugulose or striate, interspaces punctate or not.	3
2a. Head and thorax dark brown to blackish, little, if any, lighter than gaster.	<i>C. larreae</i> .
These two species, <i>C. larreae</i> and <i>C. depilis</i> , are indistinguishable based on the highly variable characters available, PS Ward, 2005, (pers comm).	

b. Head and thorax yellowish to reddish, distinctly lighter than gaster. *C. depilis*

3a. A single erect hair on each pronotal humerus, none elsewhere on thoracic dorsum; spaces between rugulae densely punctulate, rugulae often more or less effaced.4

b. At least two erect hairs on each pronotal humerus and usually a few shorter hairs at rear of mesonotum; spaces between rugulae of thoracic dorsum more or less shiny and indistinctly punctulate.5

4a. Pubescence suberect on scape and head, suberect and long on body. *C. californica*

b. Pubescence on scape and head appressed, that of body short and appressed. *C. opuntiae*

5a. Lower mesopleura distinctly striate; mesonotal declivity abrupt, angular in profile. *C. mormonum*

b. Lower mesopleura densely punctate; mesonotal declivity, in profile, evenly rounded. *C. hespera*

***Cyphomyrmex*.**

WORKERS and FEMALES.

1a. Antennal scape not surpassing posterior corner of head; node of petiole with a pair of teeth on dorsal surface; worker length 2.0-2.5 mm. *C. wheeleri*

b. Antennal scape distinctly surpassing posterior corner of head; node of petiole without teeth on dorsal surface; worker length 1.7-2.1 mm. *C. flavidus*

MALES.

1a. Scrobal carina extending to occipital margin. *C. wheeleri*

b. Scrobal carina not extending beyond level of anterior ocellus. *C. flavidus*

***Messor* - Workers and females only.**

EL = Eye length. OMD = Ocular-mandibular distance

1a. Clypeus without anteromedian projection; eye of worker, in profile, evenly rounded below; base of scape usually flattened or enlarged.2

b. Clypeus with more or less triangular anteromedian prominence; eye of worker in profile, distinctly narrowed and angular below; base of scape narrow, not flattened. *M. pergandei*

2a. Head with weak longitudinal rugulae and scattered coarse punctures; psammophore sharply defined; EL equals or exceeds OMD; base of scape flattened.3

b. Head with coarse, somewhat wavy rugae over entire dorsum and scattered coarse punctures; psammophore weak, gular area with sparse, long erect hairs; EL much less than OMD; base of scape enlarged, trumpet-like. *M. andrei*

3a. Base of scape strongly flattened and broader than apex; propodeal spines about as long as distance between their bases; rugae around antennal socket straight. *M. smithi*

b. Base of scape weakly flattened, narrower than apex; propodeal spines shorter than distance between their bases; rugae around antennal socket curved toward midline. *M. lariversi*

***Manica*.**

The genus is represented in our area by one species, *M. invidia*. Recorded from the Owen's Valley.

***Monomorium*.**

The genus is represented in the deserts by a single species, *M. ergatogyna*. It is tiny, shiny black and can be found slowly foraging in litter.

***Pheidole*.**

The species in this genus is exceedingly difficult to identify. Having both major and minor workers in hand eases the task as you will be able to use both keys.

MINOR WORKERS. CI = (HW)(100/HL). EL = Eye length. HL = Head length. HW = Head width. IOD = Interocular distance. OMD = Ocular-mandibular distance. OI = (EL)(100/HL). OD = transverse dia. of anterior ocellus. OOD = ocellocular distance. SI = (SL)(100/HW). SL = Scape length.

*There are no records of *Pheidole micula* in the area of study; all so-called *P. micula* are misidentifications of *P. rugulosa*, but we have included it in the key to emphasize differences between these superficially similar ants.

- 1a. Antennal club composed of three segments, antepenultimate segment clearly longer than preceding segment; OMD usually less than EL; head usually smooth and shiny, with scattered punctures.2
b. Antennal club composed of four segments, antepenultimate segment no longer than preceding segment; OMD more than EL; dorsum of head, except along midline, conspicuously and densely punctate.*P. clydei*
- 2a. Head, in frontal view, much narrowed behind eyes and/or scape extending beyond occipital margin by more than one-third its length; EL equal to OMD.3
b. Head, in frontal view, not narrowed, occipital margin straight or concave; scape extending beyond occipital margin by no more than one-third its length; OMD usually less than EL.5
- 3a. Head sharply narrowed behind eyes to form a short neck at occipital margin; HL about 1.3-1.4 times HW.4
b. Head weakly to moderately narrowed behind eyes, not forming neck at occipital margin; HL about 1.2 times HW.*P. hyatti*
- 4a. Dorsum of head and thorax and basal half, or more, of first gastric tergum more or less distinctly reticulate-punctulate; propodeal spines short, slender, directed upward; occipital neck, exclusive of flange, equal to about 0.5 times interocular distance.*P. vistana*
b. Dorsum of head, thorax and all of first gastric tergum mostly smooth and shiny, with limited areas of obscure reticulopunctuation; propodeal spines short, triangular, oblique; occipital neck about 0.6 times interocular distance.*P. desertorum*
- 5a. Venter of head convex on either side of gular suture and without trace of fringing psammophore; propodeal spines usually present and distinct; eye ovoid.6
b. Venter of head flattened and with a distinct psammophore of long curved setae; propodeal spines absent; eyes large, elongate.*P. psammophila*

- 6a. Dorsum of head and thorax (usually) largely smooth and shiny, punctulae, when present, obscure and limited in extent; mesonotum, in profile, often evenly curved or straight; scape exceeding occipital margin, if at all, by one-fifth its length or less.7
- b. Head and thorax closely and sharply punctulate with shiny areas along middle of head and promesonotum; mesonotum angulate in profile; scape surpassing occipital margin by about one-fourth its length.*P. sciophila*
- 7a. Propodeum conspicuously punctulate, with short, but distinct, spines or teeth; occipital margin usually distinctly concave; postpetiole, in profile, more or less distinctly nodose.8
- b. Propodeum weakly punctulate or smooth and shiny, without spines or teeth, at most angulate at juncture of basal and posterior faces; occipital margin flat or weakly convex; postpetiole not nodose in profile.*P. barbata*
- 8a. EL at least 1.5 x OMD, interocular distance no more than 3.0 x EL, usually much less.9
- b. EL no more than 1.1 x OMD, interocular distance about 3.5 x EL.*P. micula**

(this species does not occur in the Calif. Deserts but *P. rugulosa* comes out here in the key.)

- 9a. EL not more than about 1.9 x OMD and usually less than 1.7; OI various but often less than 30; promesonotum usually smooth and shiny, without distinctly punctulate areas; if punctulae present, HW does not exceed 0.49 mm and occiput is not punctulate in middle.10
- b. EL 2 or more x OMD; OI = 31-36; promesonotum extensively punctulate; HW more than 0.50 mm; occiput with a small punctulate area in middle.*P. xerophila*
- 10a. Promesonotal hairs slender, flexuous, longest about equal to EL, clearly greater than MOD; tibial hairs decumbent to erect.11
- b. Promesonotal hairs stout, stiff, longest about equal to MOD; tibial hairs appressed.*P. rugulosa*

(*P. cerebrorior* also comes out here.)

- 11a. Eye large, OI = 30-35.12
- b. Eye small, OI = 24-26 (middle of occiput smooth and shiny; anterior slope of pronotum smooth and shiny, a few weak punctulae on pronotal neck).*P. paiute*

(*P. bicarinata* from the New York Mtns comes out here.)

- 12a. Middle of occiput and anterior slope of pronotum usually weakly punctulae, rarely one only punctulae; occipital margin, in frontal view, broadly, shallowly concave.*P. gilvessens*
- b. Middle of occiput and anterior slope of pronotum both smooth and shiny; occipital margin deeply, often angularly, concave, often subcordate.*P. yaqui*

MAJOR WORKERS

- 1a. Antennal club 3-segmented, segment 9 similar to preceding segments; gular teeth present or absent....2
- b. Antennal club 4-segmented, antennal segment 9 more similar to 10 than preceding segments; one pair of gular teeth, mesial pair absent.*P. clydei*
- 2a. Apex of antennal scape surpassing occipital margin; mesial pair of gular teeth slender, spiniform.3
- b. Apex of antennal scape not attaining occipital margin; when gular teeth present, mesial pair usually triangular.4

- 3a. Scape surpassing occipital margin by less than length of following segment; first gastric tergum moderately shiny, lightly tessellate; clypeus shiny, flat or slightly raised along midline.*P. desertorum*
- b. Scape surpassing occipital margin by more than length of following segment; first gastric tergum dull, closely punctulate; clypeus moderately shiny, with sharp longitudinal median carina.*P. vistana*
- 4a. Scape extending no more than two-thirds of distance to occipital margin, not flattened at basal bend; first gastric tergum smooth and shiny.5
- b. Scape extending three-fourths of distance to occipital margin, abruptly bent and flattened at base; first gastric tergum distinctly roughened.*P. hyatti*
- 5a. Tops of occipital lobes distinctly transversely striate; mesial pair of gular teeth absent.6
- b. Tops of occipital lobes smooth and shiny, or variously sculptured, but not striate; gular teeth various.7
- 6a. Ventral mandibular carina not visible in frontal view; hairs of hind tibia appressed; OMD less than EL.*P. rugulosa*
- b. Ventral mandibular carina visible, flange-like, in frontal view; hairs of hind tibia suberect to erect; OMD greater than EL.*P. micula**
- (this species , *P. micula*, does not occur in the Calif. Deserts but *P. rugulosa* comes out here.)
- 7a. Gular teeth absent; longest genal hairs at least 0.35 mm; OMD equal to, or less than, EL.8
- b. At least one pair of gular teeth; longest gular hairs no more than 0.25 mm, usually less than 0.20; OMD usually greater than EL.9
- 8a. Propodeal teeth absent or propodeum broadly triangular at junction of basal and posterior faces; postpetiole with broad, thin ventral process; longest genal hairs about 0.35 mm. *P. barbata*
- b. Propodeal teeth distinct, sharp; postpetiole without ventral process; longest genal hairs about 0.60 mm.
.....*P. psammophila*
- 9a. Dorsum of head mostly smooth and shiny with scattered coarse, piligerous punctures; promesonotal dorsum similar or with coarse transverse rugulae with moderately punctulate interspaces; mesal pair of gular teeth absent.10
- b. Dorsum of head and promesonotum densely granulopunctate; mesial pair of gular teeth present, spiniform.
..... *P. sciophila*
- 10a. Promesonotal dorsum smooth and shiny; when sculpturation present consisting of fine, transverse striae, usually restricted to anterior slope of pronotum, with shiny interspaces.11
- b. Promesonotal dorsum crossed by coarse, somewhat wavy, transverse rugulae, interspaces moderately punctulate.
.....*P. xerophila*
- 11a. Head, in profile, without flattened area extending posteriorly from antennal fossa; occipital lobes thick and evenly rounded in profile; anterior slope of pronotum smooth and shiny; HW less than 1.28 mm.12
- b. Head, in profile, with flattened area extending from antennal fossa toward occipital lobe; occipital lobe with dorsal and ventral surfaces notably convergent toward crest of lobe; anterior slope of pronotum usually crossed by a few fine, transverse striae; HW over 1.45 mm.*P. gilvescens*
- 12a. Mandible coarsely striate over basal one-half or more; head slightly flattened dorsomesad of eye, with coarse punctures and fine striae; HW 0.96-1.08 mm.*P. paiute*

b. Mandible usually without striae beyond basal one-third; head without flattened and coarsely punctate area dorsomesad of eye; HW 1.01-1.23 mm. *P. yaqui*

FEMALES (*Pheidole*)

Females of *P. micula* and *P. yaqui* were not available for study and so are not included in the key.

1a. Antennal club 3-segmented, ninth segment more similar to eighth than tenth; gular teeth various, one or two pairs or none.2

b. Antennal club 4-segmented, ninth segment more similar to tenth than to eighth; one pair of gular teeth. *P. clydei*

2a. Antennal scape surpassing occipital margin; first gastric segment conspicuously sculptured; two pairs of gular teeth, mesial pair often spiniform.3

b. Antennal scape not reaching occipital margin; first gastric tergum usually smooth and shiny; medial pair of gular teeth, when present, usually dentiform, rarely spiniform.4

3a. First gastric tergum moderately shiny, lightly tessellate; mesoscutum moderately shiny, with scattered coarse punctures over disc. *P. desertorum*

b. First gastric tergum dull, densely punctulate; mesoscutum dull, densely punctate between close, very irregular rugulae. *P. vistana*

4a. Antennal scape cylindrical or slightly flattened at basal bend; apex of scape not extending beyond level of posterior ocelli; occipital area often smooth and shiny.5

b. Antennal scape greatly flattened and broadened at basal bend; apex of scape reaching nearly to occipital margin; dorsum of head rugulose and reticulate, interspaces punctulate. *P. hyatti*

5a. Dorsum of head longitudinally striate or rugulose, or reticulate-rugose at least to level of anterior ocellus, interspaces more or less punctulate.6

b. Dorsum of head coarsely rugose below, rugae not attaining level of anterior ocellus, most areas smooth and shiny, with scattered coarse, setigerous punctures.8

6a. Side of pronotum distinctly sculptured; IOD about twice OD; occiput, in frontal view, weakly concave; HW over 1.0 mm.7

b. Side of pronotum smooth, shiny; IOD about 3 x OD; occiput, in frontal view, deeply concave; HW less than 1.0 mm.

..... *P. Paiute*

7a. Dorsum of head with prominent, widely spaced longitudinal rugulae which break up to form reticulæ at sides; interspaces somewhat shiny and lightly punctulate; occipital corners transversely rugulose and punctulate; one pair of gular teeth. *P. rugulosa*

(Some *P. yaqui* come out here.)

b. Dorsum of head with fine, close, longitudinal striae, weaker at sides, interspaces dull, densely punctulate; occipital corners smooth, shiny between scattered coarse punctures; two pair of gular teeth. *P. sciophila*

8a. Venter of head with numerous long, slender, apically curled hairs, many at least 0.45 mm long; node of postpetiole dull, roughened and punctulate between irregular rugulae.9

b. Venter of head with sparse hairs only, longest not over 0.25 mm; node of postpetiole moderately shiny, faintly punctulate between scattered coarse punctures.	10
9a. Eye without erect hairs; lower gular area, on either side of midline with a large bare area surrounded by a fringe of long curled setae; most of area of frontal lobes and frons with coarse, longitudinal striae; HW 1.53-1.62 mm. <i>P. barbata</i>	
b. Eye with erect hairs; entire gular area with hairs, many long and curled, no defined bare areas; most of area of frontal lobes and frons smooth and shiny, with scattered coarse punctures; HW 1.80 mm.	<i>P. psammophila</i>
10a. Side of pronotum weakly tessellate, moderately shiny, without distinct striae; ocellar area not notably darkened; infraspinal facet of propodeum punctulate but without coarse transverse striae.	<i>P. gilvescens</i>
	(<i>P. cerebrorior</i> comes out here.)
b. Side of pronotum closely punctulate, roughened and with fine transverse rugulae; ocellar area dark; infraspinal faces of propodeum densely punctulate between coarse, transverse, widely spaced rugulae.	<i>P. xerophila</i>
MALES (<i>Pheidole</i>)	
Males of <i>P. clydei</i> , <i>P. micula</i> , <i>P. psammophila</i> , <i>P. sciophila</i> and <i>P. yaqui</i> were not been available for study and so were not included in the key.	
1a. Mesoscutum either smooth and shiny between spaces coarse setigerous punctures or more or less finely lineopunctulate; scutellum smooth and shiny; mandibular dentition and scape length various.	2
b. Entire thorax dull and densely punctulate, occasionally with shiny areas on mesoscutum and mesopleura; mandible with apical tooth and broad basal tooth on margin; scape about 5x longer than thick.	<i>P. vistana</i>
2a. Scape short, no more than 3.5 x OD.	3
b. Scape long, slender, about 5 x longer than thick; OOD about 2x OD.	<i>P. barbata</i>
3a. SL at least 1.4 x OOD, usually more; scape at least 3x longer than thick.	4
b. SL less than 1.25 x OOD; scape no more than 2.5x longer than thick.	5
4a. Greatest width of head (through eyes) about 1.4 x HL; rugae of infraspinal facet of propodeum, when transverse, not crossing segment but turning forward in middle.	<i>P. xerophila</i>
b. Greatest HW (through eyes) no more than 1.3 x HL; infraspinal facet of propodeum with completely transverse rugulae.	<i>P. gilvescens</i>
5a. Greatest HW at least 0.8 mm; occipital flange broad, translucent or transparent.	6
b. Greatest HW no more than 0.7 mm; occipital flange narrow, opaque.	7
6a. Mandible with several short teeth basad of apical tooth; greatest HW more than 0.91 mm.	<i>P. desertorum</i>
b. Mandible usually with a single broad tooth basad of apical tooth; greatest HW less than 0.84 mm.	<i>P. hyatti</i>
7a. Integument dark brown; mediobasal area of propodeum with a few transverse striae, those of side vertical, turning forward, toward base, along lateral angle.	<i>P. paiute</i>
b. Integument yellowish brown; striae of median area of propodeum longitudinal, divergent behind, joining longitudinal striae of side.	<i>P. rugulose</i>

Pogonomyrmex.

Workers. EL = Eye length, HL = Head length, OI = (EL)(100/HL), OMD = oculo-mandibular distance, SL = Scape length

- 1a. Eye at center of side of head; psammophore fully developed; propodeal spines, when present, not connected basally by a transverse ridge or keel.2
b. Eye distinctly below middle of side of head; psammophore weakly developed; propodeal spines joined by a prominent ridge between their bases. ... (= *Epebomyrmex*).....*P. imberbiculus*
- 2a. Venter of petiole with a few long, erect hairs; eye small and weakly convex, not extending beyond side of head in frontal view; in frontal view, cephalic rugae mainly straight and parallel, diverging slightly into posterior corners.3
b. Venter of petiole without erect hairs; eye large and strongly convex, extending beyond side of head in frontal view; in frontal view, cephalic rugae tending notably to curve above eye and toward occipital corner.5
- 3a. Cephalic rugae extremely fine and close, producing silky luster; pronotal rugae fine, not forming reticulae; pronotal dorsum convex.4
b. Cephalic rugae very coarse, widely spaced, usually wavy; pronotal rugae coarse, irregular, tending to form coarse reticulae; pronotal dorsum somewhat flattened.*P. rugosus*
- 4a. Propodeal spines slender, scarcely tapering from base to apex; clypeal angles strongly protuberant in front of antennal sockets; petiole without prominent ventral lobe.*P. tenuispinus*
b. Propodeal spines notably tapering from base to apex; clypeal angles weakly protuberant in front of antennal sockets; petiole with prominent ventral lobe.*P. desertorum*
- 5a. Mandible with seven teeth, basal tooth larger than subbasal tooth; petiole and postpetiole without prominent ventral processes; posterior corner of occiput not carinate.6
b. Mandible with six teeth, basal tooth smaller than subbasal tooth; petiole and postpetiole each with prominent ventral process; posterior corners of occiput with sharp, short carina.*P. anzensis*
- 6a. In profile, cephalic rugulae forming concentric loops over eye; propodeum unarmed or, at most, with very short denticles.7
b. In profile, cephalic rugulae not forming concentric loops over eye; propodeum spinose.*P. subnitidus*
- 7a. Eye not unusually large; EL notably less than OMD; larger species, length 6.8-8.7 mm.8
b. Eye large, EL more than, equal to, or only slightly less than OMD; smaller species, 4.7-5.2 mm.*P. magnacanthus*
- 8a. Cephalic interrugal punctulae absent to moderate; interrugal punctulae of mesopleura and pronotal side very weak or absent; interrugal spaces shiny.*P. californicus*
b. Interrugal punctulae of head, pronotal side and mesopleura moderate to strong, interrugal spaces subopaque.
.....*P. maricopa*

FEMALES (*Pogonomyrmex*)

- 1a. Outer margin of frontal lobes distinctly convex, not subparallel; anterior portion of scutellum much higher than adjacent area of scutum; hairs on wing membrane mostly very short, stiff and blunt.2
- b. Outer margin of frontal lobes nearly straight, subparallel; anterior portion of scutellum no higher than adjacent area of scutum; hairs on wing membrane very long, slender and flexuous.(=*Ephebomyrmex*)*P. imberbiculus*
- 2a. Venter of petiole with a few erect hairs, usually long; scape notably shorter than distance from mandibular base to posterior corner of head; forewing usually with one cubital cell.3
- b. Venter of petiole without erect hairs; scape usually at least as long as distance from mandibular base to posterior corner of head; forewing usually with two cubital cells.5
- 3a. Cephalic dorsum uniformly longitudinally rugulose or striate between eye and midline; dorsum of petiolar node without longitudinal furrow; HW at least 1.9 mm, usually more than 2.2 mm.4
- b. Cephalic dorsum weakly longitudinally striate in middle, closely punctulate on either side; dorsum of petiolar node with longitudinal furrow which divides summit of node; HW no more than 1.8 mm.new species
- 4a. Cephalic and mesoscutal rugae very fine and closely spaced, producing a silky luster; outer surface of scape base, in repose, not strongly concave; less than 10 mm long.*P. desertorum*
- b. Cephalic and mesoscutal rugae coarse and widely spaced, not producing a silky luster; outer surface of scape base, in repose, strongly concave; more than 11 mm long.*P. rugosus*
- 5a. In profile, cephalic rugulae forming concentric loops over eye; propodeum generally unarmed, rarely with a pair of very short denticles.6
- b. In profile, cephalic rugulae not forming concentric loops over eye; propodeum with a pair of distinct spines.
.....*P. subnitidus*
- 6a. Eye small, OI 21-24; OMD nearly twice EL.7
- b. Eye large, OI 31; OMD no more than EL.*P. magnacanthus*
- 7a. Interrugal space of head smooth and shiny, without definite sculpture; propodeum unarmed.*P. californicus*
- b. Interrugal spaces of head moderately shiny, with weak to moderate sculpture; propodeum generally unarmed, but a pair of tuberculate spines sometimes present.*P. maricopa*

MALES. (*Pogonomyrmex*)

- 1a. SL more than combined lengths of antennal segments 3 and 4; flagellum hairy, with numerous long, decumbent to suberect hairs; body hairs long, fine, mostly flexuous or curved; (except one species); Hairs on wing membrane mostly short, stiff and blunt frontal carinae well developed.2
- b. SL less than length of antennal segment 3; flagellum without long, decumbent to suberect hairs; body hairs short, stiff and straight; hairs on wing membrane long, fine and flexuous; frontal carinae undeveloped.*P. imberbiculus*
- 2a. Venter of petiole with numerous long, erect, ventrally directed hairs; forewing usually with one cubital cell; head, in frontal view, with margin between eye and occipital corner evenly, rather strongly, convex.3
- b. Venter of petiole usually with no erect hairs, rarely a few present; forewing usually with two cubital cells; head, in frontal view, not evenly or strongly convex between eyes and occipital corner.5
- 3a. Outer surface of base of antennal scape strongly flattened or broadly concave; body color generally fuscous yellow or brown.4

- b. Outer surface of base of antennal scape neither flattened nor concave; petiole, postpetiole and gaster lighter colored than head and thorax.*P. desertorum*
- 4a. Large, HW at least 2.1 mm; hairs abundant, long, flexuous, pale; node of petiole, in profile, low broadly rounded.*P. rugosus*
- b. Smaller, HW about 1.5 mm; hairs straight, stiff, with blunt tips, yellowish; node of petiole, in profile, high and sharply rounded at summit.new species
- 5a. Denticulate margin of mandible transverse, with 2 to 5 teeth; vertex usually without sharply elevated longitudinal ridge; apex of paramere, in profile, angulate with lower margin.6
- b. Denticulate margin of mandible oblique, with 4 or 5 teeth; vertex usually with sharply elevated median, longitudinal ridge; apex of paramere, in profile, broadly rounded into lower margin.*P. subnitidus*
- 6a. Eye small, OI 32-43; OMD more than 0.33 x EL.7
- b. Eye large, OI 52-54; OMD equal to, or less than, 0.33 x EL.*P. magnacanthus*
- 7a. Mandible with 2-4 (usually 2 or 3) teeth; anterior declivity of pronotum, in profile, straight, meeting collar at abrupt angle; length and width of terminal lobe of paramere, in profile, subequal.*P. californicus*
- b. Mandible with 3-5 (usually 3 or 4) teeth; anterior declivity of pronotum, in profile, concave, meeting collar at well rounded angle; terminal lobe of paramere, in profile broader than long.*P. maricopa*

***Pyramica*.**

There is a single species reported in the California deserts. This undescribed species, *Pyramica* CA-01 (in 2011), was found near Pichalka Spring in the Clark Mtns. The ants are rare and cryptic.

***Solenopsis*.**

WORKERS.

- 1a. Eye large, with 20 or more facets; third, and usually fourth, antennal segment at least 1.5x longer than wide; polymorphic.2
- b. Eye minute, consisting of three to six facets; third and fourth antennal segments no longer than broad; monomorphic or weakly polymorphic.4
- 2a. Eye of major with 70-80 facets (about 50 in minor), OMD 1.0-1.5 x EL; head and thorax light to dark red, gaster largely blackish. Some pale specimens resemble *S. aurea*.*S. xyloni*
- b. Eye of major with 40-50 facets (about 20 in minor), OMD 1.6-2.0 x EL; entirely yellowish, gastric segments margined with brownish.3
- 3a. Standing pilosity on pronotum sparse, fewer than about 6 hairs. *S. amblychila*
- b. Standing pilosity on pronotum more abundant, more than 10 hairs.*S. aurea*
- 4a. Cephalic punctures 3- 4x diameter of hairs arising from them; mandible 4-toothed; propodeum, in profile, with distinct basal and apical faces joined through an abrupt curve.*S. salina*

b. Cephalic punctures on more than twice diameter of hairs arising from them, usually less; mandible 3-toothed or, if 4-toothed, inner tooth is on basal margin and distinctly separated from other; propodeum, in profile, evenly curved from base to apex, without discrete basal and apical faces. *S. molesta*

Stenamma.

This genus is represented in our area by a single record of *S. californicum* from Caruthers Canyon in the New York Mountains. It is an unusual record and is far out of its expected range closer to the coast.

Temnothorax.

Workers.

- 1a. Antenna 11-segmented. *T. whitfordi*
- b. Antenna 12-segmented. 2
- 2a. Eye large and reniform. *T. obliquicanthus*
- b. Eye not notably large, oval. 3
- 3a. Epinotal spine large, well developed. *T. nevadensis*
- b. Epinotal spine small, denticulate or angulate. 4
- 4a. Dorsal half of head smooth and more or less shining. *T. nitens*
- b. Entire head sculptured, surface dull to opaque. 5
- 5a. Color concolorous pale yellowish; dorsum of mesonotum and epinotum smooth. *T. andrei*
- b. Color brownish black; dorsum of mesonotum and epinotum rugose. *T. neomexicanus*

Tetramorium.

There is a single native species, *T. spinosum*, recorded in our deserts.

Dolichoderinae

- 1a. Juncture of basal and posterior faces of worker propodeum rounded, not at all produced upward as a conical process when viewed from side; Third segment of maxillary palp distinctly shorter than following three combined. 2
- b. Juncture of basal and posterior faces of worker propodeum, in profile, conically produced upward; third segment of maxillary palp longer than following three combined. (*Dorymyrmex*). 7
- 2a. Worker monomorphic; gastric terga without appressed dense, long grayish pubescence; gap between lateral margin of clypeus and mandibular base very narrow. 4
- b. Worker polymorphic; gastric terga with appressed dense, long grayish pubescence; gap between lateral margin of clypeus and mandibular base large. (*Liometopum*, massive colonies in oak cavities) 3
- 3a. Thorax orange to brown. *L. occidentale*
- b. Thorax black. *L. luctuosum*
- 4a. Dorsal surface of head and thorax with at least a few long erect setae; petiolar scale small, distinct, erect or suberect.

b. Dorsal surface of head and thorax without erect setae (a few present on clypeus); petiolar scale very small, strongly inclined forward, adnate to anterior peduncle.	5
	<i>Tapinoma sessile</i>
5a. Apical margin of clypeus thin, not at all beveled in middle; mandible with four distinct, close teeth and a weak basal tooth, denticles present only between basal and subbasal teeth; worker metanotum not depressed below base of propodeum, latter flat. (<i>Forelius</i>)	6
b. Apical margin of clypeus thick, with median, triangular beveled area; mandible with four or five widely spaced teeth, with several minute denticles between each (except apical and preapical teeth); Metanotum of worker sharply depressed below level of anterior margin of propodeal base, latter strongly convex; limited to irrigated places.	
	<i>Linepithema humile</i>
6a. Antennal scape and all tibiae with at least a few suberect to erect hairs; occipital corner with a few short erect hairs; worker pronotum with 6 or more erect hairs.	<i>Forelius mccoeki</i>
b. Scape, tibiae and occipital corner without erect hairs; worker pronotum with 2 or 4 erect hairs.	<i>Forelius pruinosus</i>
7a. Head and thorax ferruginous, gaster brownish black.	<i>Dorymyrmex bicolor</i>
b. Head, thorax and gaster concolorous, from light brownish to blackish brown.	8
8a. Mesonotum, in profile, distinctly broadly angulate at about posterior two-thirds so that there are two distinct surfaces.	9
b. Mesonotal profile more or less evenly curved without angulation posteriorly.	10
9a. Color light to very dark brownish, head and gaster commonly darker than mesosoma; pronotal seta pair usually present.	<i>Dorymyrmex insanus</i>
b. Color clear yellowish to reddish yellow, often with vertex, mesosomal dorsum, and apex of gaster infuscated; pronotal seta pair commonly absent.	<i>Dorymyrmex flavus</i>
10a. Mesonotum weakly curved in profile; eyes exceptionally large; head and gaster brown, distinctly darker than mesosoma.	<i>Dorymyrmex CA-01</i>
b. Mesosoma strongly convex in profile; eyes not exceptionally large; head and mesosoma concolorous yellowish red, gaster mostly dull brownish. ...This name does not appear in AntWeb.org and should be viewed with suspicion.	
	<i>Dorymyrmex sp 1</i>

MALES.

1a. Scape much longer than second flagellar segment.	2
b. Second flagellar segment distinctly longer than scape.	<i>Linepithema humile</i>
2a. Third segment of maxillary palp about as long as second, much shorter than combined lengths of last three; head dorsoventrally flattened or not.	3
b. Third segment or maxillary palp much longer than second, about equal to combined lengths of last three; head dorsoventrally flattened.	<i>Dorymyrmex spp.</i>

- 3a. Scape shorter than combined lengths of next four segments; base of gaster without impressed area for reception of petiole; erect body hairs often abundant.4
 b. Scape about as long as combined lengths of next five segments; base of gaster with impressed area for reception of petiole; erect body hairs sparse.*Tapinoma sessile*
- 4a. Head distinctly flattened, more or less concave beneath; body hairs sparse; length less than 4 mm.*Forelius* spp.
 b. Head convex dorsally and ventrally; body hairs abundant; length 7-11 mm.*Liometopum* spp.

Formicinae

WORKERS

- 1a. Antenna 12-segmented.2
 b. Antenna 9-segmented.*Brachymyrmex*, p 19
- 2a. Thoracic dorsum, in profile, with propodeum distinctly depressed below level of promesonotum; metanotal impression usually distinct; antennal socket at or near margin of clypeus.3
 b. Propodeum in profile not depressed below level of promesonotum; metanotal impression absent or very weak; antennal socket well removed from margin of clypeus.*Camponotus*, p 20
- 3a. Maxillary palp no longer than head, third and fourth segments not unusually long; psammophore absent.4
 b. Maxillary palp longer than head, third and fourth segments very long; psammophore present but weak.
*Myrmecocystus*, p 23
- 4a. Frontal carinae weak, rounded into antennal fossa; ocelli absent or indistinct; body and appendages with erect setae.
5
 b. Frontal carinae prominent, lateral margins slightly reflected upward; ocelli present, distinct; body and appendages without coarse, dark erect setae.*Formica*, p 22
- 5a. Body and appendages with coarse, dark erect setae, those on thoracic dorsum appear paired. *Paratrechina*, p 31
 b. Body and appendages setae pale and flexuous.*Lasius*, p 23

MALES.

- 1a. Antenna 13-segmented; mandible well developed, with masticatory margin.2
 b. Antenna 10-segmented; mandible vestigial, narrow and pointed, without masticatory margin.*Brachymyrmex*
- 2a. Antennal socket not, or very narrowly, separated from margin of clypeus.3
 b. Antennal socket separated from clypeal margin by about ½ its minimum diameter.*Camponotus*
- 3a. Maxillary palp of normal length, fourth segment shorter than combined lengths of fifth and sixth.4
 b. Maxillary palp unusually long, fourth segment longer than combined lengths of fifth and sixth.*Myrmecocystus*
- 4a. Tibiae and scape with coarse, dark erect hairs; cerci absent. *Paratrechina*
 b. Tibiae and scape without coarse, dark erect hairs; cerci present.5

- 5a. Large, 7-8 mm long; scape extends about ½ its length beyond the occipital border.*Formica*
 b. Small, 3-4 mm long; scape extends about 1/3 its length beyond the occipital border.*Lasius*

Brachymyrmex

This genus is represented by a single species in our area, *B. depilis*. This tiny ant is widespread across the United States.

Camponotus

WORKERS.

- 1a. Head of major, in profile, evenly arched from clypeal apex to vertex, lower area not sharply contrastingly sculptured.2
 b. Head of major, in profile, obliquely truncate below, truncation marginate and involving most of clypeus and adjacent side of face, truncated portion vermiculate-rugose or reticulose, sharply contrasting with sculpture elsewhere on head (subg. *Colobopsis*).....(May enter CA in the se corner of the state).....*C. papago* Creighton
- 2a. (1) Lower margin of median lobe of clypeus thickened, either transverse or slightly convex and irregularly eroded or subdentate (subg. *Tanaemyrmex*)..... 3
 b. Lower margin of median lobe of clypeus thin, weakly convex and semicircularly depressed and incised in middle (subg. *Myrmentoma*) 12
- 3a. (2) Malar area without erect hairs or with no more than two or three; lower margin of clypeus slightly convex, irregular; scape without erect hairs except several tip..... 9
 b. Malar area with 15+ erect hairs; median lobe of clypeus set off on each side by distinct angulation, its ventral margin transverse, even; scape with scattered erect hairs. 4
- 4a. (3) Majors5
 b. Medias/minors7
- 5a. (4) Frontal view, fringe of standing hairs from mandible to posterior-lateral angle6
 b. Frontal view, fringe of standing hairs from mandible to eye only*C. absquatulator*
- 6a. (5) Larger species. HW 2.45-2.75 mm; side of Pronotum, above ventral margin, with 1-5 fully erect straight setae in addition to scattered prostrate pubescence*C. festinatus*
 b. Smaller species. HW 1.95-2.50 mm; side of Pronotum, above ventral margin, with scattered prostrate pubescence, but without erect setae.*C. fragilis*
- 7a. (4) In frontal view, lateral margins of head with standing setae (may be sparse); scape shaft usually with at least several standing setae.8
 b. In frontal view, lateral margins of head without standing setae; scape shaft without standing setae and pubescence fully appressed.*C. absquatulator*
- 8a. (7) Larger species, HW 1.05-1.45 mm, usually > 1.20 mm; central TX west to se AZ, adjacent northern Mexico; usually mesic habitats.*C. festinatus*

- b. Smaller species, HW 0.90-1.25 mm, usually < 1.10 mm; deserts of central AZ and adjacent Mexico to southern CA and Baja California peninsula. *C. fragilis*
- 9a. (3) Metatibia usually not contrastingly darker than femur; median carina of clypeus not terminating in blunt tooth; pronotum usually with 10 or more erect hairs and node of petiole with five or six on each side; scape usually flattened at base..... 10
- b. Metatibia blackish, contrasting with femur; median carina of clypeus ending in blunt tooth; pronotum with fewer than ten, often no, erect hairs and scale of petiole with no more than two or three, often no, erect hairs on each side; scape not flattened at base. *ocreatus* Emery
- 10a. (9) Base of scape flattened, at least slightly broader at base than immediately beyond; pubescence of second abdominal tergum usually shorter than distance between individual hairs. 11
- b. Scape narrowest at base, weakly flattened; discal pubescence of second abdominal tergum longer than distance between individual hairs. *vicinus* Mayr
- 11a. (10) Margins of head of major, in frontal view, distinctly convergent toward mandibular bases; scape with small lateral lobule at base; apex of scape of major exceeding vertex corner by at least its apical breadth.
..... *semitestaceus* Snelling
- b. Head of major quadrate, margins strongly convergent immediately above mandibular base; scape base broad, flattened, not lobulate; apex of scape of major exceeding vertex corner, if at all, by less than its apical breadth.
..... *sansabeanus* (Buckley)
- 12a. (2) Metanotum, in profile, distinctly depressed below adjacent mesonotum and propodeum; outer face of mandible with round punctures, interspaces often polished; clypeus of major flattened and shiny. *hyatti* Emery
- b. Metanotum, in profile, little, if any, depressed; outer face of mandible with elongate punctures, interspaces dull; clypeus of major convex, dull (Figs. 215, 216)..... *sayi* Emery
- FEMALES** (*Camponotus*)
- 1a. Head, in profile, evenly arched from lower clypeal margin to vertex; lower portions neither vermiculate-rugose nor reticulose.....2
- b. Head, in profile, obliquely truncate below, truncation marginate and involving most of clypeus and adjacent sides of face and vermiculate-rugose or reticulose (subg. *Colobopsis*).....(May enter CA in se corner of state)..... *papago* Creighton
- 2a. (I) Ventral margin of median lobe of clypeus thickened, either transverse or slightly convex and irregularly eroded or subdentate (subg. *Tanaemyrmex*)3
- b. Ventral margin of median lobe of clypeus thin, weakly convex and semicircularly depressed and incised in middle. (subg. *Myrmentoma*).7
- 3(2) Malar area without erect hairs, or with fewer than three; ventral margin of median lobe of clypeus slightly convex and irregularly eroded..... 4
- b. Malar area with 6-15 erect hairs; median lobe of clypeus angulate at sides, ventral margin transverse; scape with scattered erect hairs.....*festinatus* complex. Go to **worker key**, couplet 4
- 4(3) Median carina of clypeus, if present, not terminating as dentiform process; base of scape flattened; summit of petiole node usually entire; tibiae no darker than femora 5

b. Median carina of clypeus terminating in dentiform process; scape cylindrical at base; petiolar node incised at summit; tibiae darker than femora *ocreatus* Emery

5(4) Scape surpassing vertex corner by more than length of second antennomere; front of head contiguously micropunctate, subgranulose, or finely and closely tessellate, punctures sparse, fine and obscure; mesosomal side slightly to moderately shiny, surface distinctly tessellate. 6

b. Scape surpassing vertex corner by less than length of second antennomere; front of head moderately shiny, with sparse sharply defined small punctures and scattered coarse punctures; mesosomal side shiny, surface weakly tessellate in most areas. *sansabeanus* (Buckley)

6(5) Scape base flattened, with small lateral lobule; front of head finely, densely tessellate, usually not appearing granulose *semitestaceus* Snelling

b. Scape base flattened, without lobule; front of head contiguously micropunctate, subgranulose..... *vicinus* Mayr

7(2) Head and mesosoma reddish; ocelli large, IOD about 3 x OD, OOD no more than 4 x OD..... *sayi* Emery

b. Head and mesosoma brownish; ocelli small, IOD at least 4.5 x I OD, OOD about 6.5 x OD *hyatti* Emery

Source. www.desertants.org/formicinae/camponotus/camponotus.html

Modified in light of:

Snelling, RR. 2006. Taxonomy of the *Camponotus festinatus* complex in the United States of America

(Hymenoptera: Formicidae). Myrmecologische Nachrichten 8: 83-97.

Formica.

WORKERS

1a. Apical margin of clypeus more or less acute in middle; clypeus with longitudinal carina; integument of head and thorax densely tessellate, only very slightly shiny.2

b. Apical margin of clypeus weakly concave or distinctly notched in middle, median carina weak or absent; integument of head and thorax smooth and shiny. *F. peripilosa*

2a. Metasternum without a pilose process on each side of spinasternal pit.3

b. Metasternum with a pilose process on each side of spinasternal pit.4

3a. Mesometasternal profile elongate, without angle; metasternal pilosity restricted to area caudad of spinasternal pit; propodeum, in profile, low and elongate. *F. xerophila*

b. Mesometasternal profile compressed and delimiting an angle; metasternal pilosity partially surrounding spinasternal pit; propodeum, in profile, high and short, distinctly subangulate. *F. gnava*

4a. Eye and scape with abundant short, fully erect hairs, eyes hairy. *F. francoeuri*

b. Eye and scape without standing hairs. *F. altipetens*

FEMALES

1a. Apical margin of clypeus more or less acute in middle; clypeus with longitudinal median carina; integument of head densely tessellate, not, or slightly, shiny.2

- b. Apical margin of clypeus weakly to distinctly notched in middle; clypeus without median carina; integument of head smooth and shiny. *F. peripilosa*
- 2a. Metasternum without a pilose process on each side of spinasternal pit.3
- b. Metasternum with pilose process on each side of spinasternal pit.4
- 3a. Eye projecting beyond side of head in frontal view; mesometasternal profile low and elongate, followed by concavity; metasternal pilosity not surrounding spinasternal pit. *F. xerophila*
- b. Eye not projecting beyond margin of head in frontal view; mesometasternal profile with high, rather narrow, convexity followed by angle; metasternal pilosity partially surrounding spinasternal pit. *F. gnava*
- 4a. Eye and scape with abundant short, fully erect hairs; eyes hairy. *F. francoeuri*
- b. Eye and scape without erect hairs. *F. altipetens*

Lasius.

There are two species recorded in our area. They occur at higher elevations in the mountains.

- 1a. Eyes composed of only a few ommatidia; color yellow to tan. *L. californicus*
- b. Eyes fully developed; color brown. *L. crypticus*

Myrmecocystus.

KEY TO SUBGENERA

WORKERS.

- 1a. Integument either: bicolorous, head and thorax ferruginous, gaster black; unicolorous ferruginous or orange; unicolorous blackish or dark brown; mandibles six or seven toothed; eye small, maximum diameter less than to slightly exceeding length of first flagellomere; ocelli present, sometimes obscure in small individuals; diurnal, matinal or crepuscular2
- b. Integument light yellow or brownish yellow; mandibles eight to ten toothed; eye large, maximum diameter much exceeding length of first flagellomere; ocelli absent or much reduced; nocturnal. *Myrmecocystus*
- 2a. Small (HL not exceeding 1.26 mm), uniformly blackish or dark brown, usually with anterior one-third of head paler; erect hairs very reduced on head and thorax (two exceptions); pubescence sparse on head; usually crepuscular or matinal *Eremnocystus*
- b. Larger (HL exceeding 0.83 mm), either bicolorous or ferruginous; usually abundantly hairy, erect hairs numerous on head and thorax, appressed pubescence usually dense on third tergum; diurnal. *Endiodictes*

FEMALES

- 1a. Integument either (a) uniformly blackish or dark brown or (b) mainly ferruginous on head and thorax, latter with black markings, gaster ferruginous or black; mandible seven-toothed 2
- b. Uniformly yellowish, thorax and gaster often with brownish infuscations; mandible eight- or nine-toothed; wing membranes without short, erect hairs, marginal fringe present/absent *Myrmecocystus*

- 2a. Integument uniformly blackish or dark brown, anterior one-third of head sometimes lighter small species, HL not exceeding 1.63 mm; wing membrane with numerous short, erect, white hairs.*Eremnocystus*
- b. Integument of head and thorax largely ferruginous, gaster blackish (except in *M. wheeleri*); larger species, HL exceeding 1.43 mm; wing membrane without short, erect, white hairs*Endiodioctes*

MALES

- 1a. Integument either (a) uniformly blackish or dark brown or (b) mainly ferruginous on head and thorax, latter often with black markings, gaster ferruginous or black mandible seven-toothed 2
- b. Uniformly yellowish, thorax and gaster often with brownish infuscations; mandible eight- or nine-toothed wing membranes without short, erect hairs, marginal fringe present/absent*Mvmecocystus*
- 2a. Integument uniformly blackish or dark brown, anterior one-third of head sometimes lighter small species, HL not exceeding 1.63 mm; wing membrane with numerous short, erect, white hairs.*Eremnocystus*
- b. Integument of head and thorax largely ferruginous, gaster blackish (except in *M. wheeleri*); larger species, HL exceeding 1.43 MM; wing membrane without short, erect, white hairs *Endiodioctes*

KEY TO SPECIES OF *ENDIODIOCTES*

WORKERS

- 1a. Abundantly hairy species: 20+ erect hairs on malar area in frontal view; scape femora and tibiae with numerous suberect to erect hairs on all surfaces; first three (usually four) terga with dense pubescence (except *intonsus*); HW of major usually in excess of 1.7 mm 2
- b. Less hairy species: fewer than 20 erect hairs on malar area in frontal view, usually fewer than 6; scape and femora often sparsely hairy ; third tergum often sparsely pubescent: HW of major less than 1.7 mm 6
- 2a. Longest occipital hairs usually shorter than EL; longest pronotal hairs as long as or (usually) shorter than EL longest discal hairs of second tergum less than EL head of major often strongly orbiculate 3
- b. Longest occipital, pronotal and discal hairs of second tergum exceeding EL; head of major not orbiculate. *melliger*
- 3a. Third tergum. and usually fourth as well, densely pubescent pronotal hairs variable, but often more than 0.5 X MOD; HW of major in excess of 1.7 mm; head of major orbiculate or not 4
- b. Third and fourth terga with scattered pubescence only ; pronotal hairs stiff, uniform. less than 0.5 X MOD: HW of major less than 1.7 mm; head of major orbiculate. *intonsus*
- 4a. Longest hairs on pronotal dorsum and disc of second tergum no more than 0.5 X MOD, usually less: head of major orbiculate or not5
- b. Longest hairs on pronotal dorsum and disc of second tergum at least 0.6 X MOD. usually about 0.75 X MOD of major with margins in frontal view, nearly parallel. *mendax*
- 5a. Frontal lobes shiny , closely, sharply punctate. punctures round or weakly ovoid frons usually with distinct, coarse punctures greater in diameter than hairs arising from them; head of major not, or weakly orbiculate (Calif., Baja Calif.)
..... *semirufus*

- b. Frontal lobes dull, irregularly. weakly punctate, punctures often elongate; frons weakly punctate, if at all. Punctures, when present not exceeding diameter of their hairs; head of major strongly orbiculate (Tex. to So. Cal.). *placodops*
- 6a. Malar area, in frontal view, with six or more erect hairs evenly distributed between eye and base of mandible. 7
- b. Malar area, in frontal view, with not more than four erect hairs, confined to lower half, near base of mandible.....11
- 7a. First three terga uniformly, densely pubescent; clypeus moderately shiny to polished, lightly tessellate to smooth; frontal lobes shiny. sparsely to closely punctate; HW variable. 8
- b. Third tergum apubescent or at least conspicuously less pubescent than first two; clypeus slightly shiny, distinctly tessellate; frontal lobes slightly shiny, distinctly tessellate, with scattered coarse punctures and dense micropunctures HW of majors 1.03-1.63 mm.(Range limited to Baja Calif. Sur)..... *intonsus*
- 8a. Tergum IV conspicuously pubescent in specimens with PW (pronotal width) in excess of 1.0 mm; erect hairs present on at least half of distance between inner eye margin and antennal socket; punctures of frontal lobes and frons of variable size and irregularly distributed. 10
- b. Tergum IV with pubescence, when present, very widely scattered: erect hairs present only adjacent to eye margin, not extending more than 0.25 of distance between eye and antennal socket; punctures of frontal lobes and frons uniformly minute, evenly distributed9
- 9a. Longest pronotal hairs more than 0.5 X MOD; malar area usually with 12-16 erect hairs; vertex usually with 12-16 erect hairs; vertex usually conspicuously, though finely, punctate toward sides. *romainei*
- b. Longest pronotal hairs less than 0.5 X MOD; malar area usually with fewer than 12 erect hairs; vertex without punctures at sides. *flaviceps*
- 10a. Longest occipital hairs 0.75-0.96 X MOD; longest pronotal hairs at least 0.6 X MOD; petiole, in profile thickly cuneate, length, at lower margin of spiracle. exceeding height from spiracle to summit. *koso*
- b. Longest occipital hairs 0.59-0.65 X MOD longest pronotal hairs less than 0.5 X MOD; petiole, in profile higher than thick, measured as above. *semirufus*
- 11a. Longest occipital hairs at least equal to MOD in majors. 12
- b. Longest occipital hairs no more than 0.6 X MOD usually about 0.5. 15
- 12a. Longest pronotal hairs about equal to EL, always exceeding MOD, hind femur with numerous suberect hairs on dorsal surface.13
- b. Longest pronotal hairs less than MOD; hind femur with only very short subappressed hairs on dorsal surface.14
- 13a. Hairs on dorsal face of hind femur less than half as long as longest hairs on disc of second tergum; CI commonly over 89; head, thorax and legs distinctly brown. *depilis*
- b. Hairs on dorsal face of hind femur at least half as long as longest hairs on disc of second tergum; CI less than 89 in 90% of specimens; head, thorax and legs ferruginous.(found in the Mexican state of Sonora.)..... *nequazcatl*
- 14a. Hairs on dorsal face of hind femur appressed to subappressed; frontal lobes and frons finely, closely and uniformly punctate; mandible septemdentate: abdomen usually wholly orange-ferruginous *wheeleri*
- b. Hairs on dorsal face of hind femur suberect, conspicuous; frontal lobes finely and very irregularly punctate with large impunctate areas; mandible octodentate; abdomen usually black, often with basal two or three terga extensively yellowish. *kathjuli*

15a. Tergum III with little or no pubescence.	16
b. Tergum III with dense pubescence.	<i>flaviceps</i>
16a. Pubescence very sparse on face; head often subpolished and shiny; side of head of large worker often converging; head, thorax and legs brownish.	<i>mimicus</i>
b. Pubescence abundant on face; head usually distinctly tessellate, not notably shiny; side of head straight in frontal view; head, thorax and legs ferruginous (top of head may be slightly brownish).	<i>kennedyi</i>
FEMALES (<i>Myrmecocystus</i>)	
1a. Penultimate segment of maxillary palp more than twice wider in basal third as at apex, the remaining segments very broad; gaster ferruginous	2
b. Penultimate segment of maxillary palp slender, more or less parallel-sided, never more than 1.5 X wider in basal third than at apex, remaining segments slender; gaster brownish or blackish.	3
2a. Punctures of frontal lobes separated by a puncture diameter or more; scutellum with median area punctate, interspaces mostly about one to two times a puncture diameter; longest scutal hairs exceeding EL.	<i>kathjuli</i>
b. Punctures of frontal lobes uniformly dense, separated by less than a puncture diameter; scutellum, along midline, impunctate or very sparsely punctate, interspaces mostly three to five times a puncture diameter, longest scutal hairs less than EL.	<i>wheeleri</i>
3a. Parapsis (lateral pieces of scutellum) closely, uniformly punctate; malar area with abundant standing hairs; HW usually in excess of 2.0mm.....	4
b. Parapsis with punctures usually of two sizes and variably spaced, never uniformly dense; malar area usually with few or no standing hairs; HW usually less than 1.9 mm	8
4a. Smaller species, HW less than 1.9 mm; if more, malar area with fewer than 10 erect hairs; disc of mesoscutum finely, sparsely punctate, usually broadly impunctate in center	5
b. Larger species. HW more than 2.0 mm; if as little as 1.9, malar area with at least 15 erect hairs; disc of mesoscutum closely, coarsely punctate, often with median impunctate area	6
5a. Malar area with fewer than 10 erect hairs, those present usually restricted to area near mandibular base; frons, on either side of midline, convexly raised, impunctate or nearly so.	<i>romainei</i>
b. Malar area with more than 10 erect hairs, evenly distributed along entire length; frons not notably raised on either side of midline, uniformly, though sparsely, punctate.	<i>depilis</i>
6a. Longest occipital hairs 0.5-1.0 X MOD, usually in excess of 0.7; longest mesoscutal hairs at least 0.5 X MOD, usually more; longest scutellar hairs at least 0.9 X MOD; scutal punctation variable; HW less than 2.3 mm.	7
b. Longest occipital and scutal hairs 0.6, or less, X MOD; longest scutellar hairs 0.8, or less, X MOD; scutum with large anteromedian impunctate area; HW 2.3 mm	<i>placodops</i>
7a. Mesoscutum uniformly punctate, sometimes with small anteromedian impunctate area.	<i>mendax</i>
b. Mesoscutum with median impunctate area extending nearly entire length of disc.	<i>melliger</i>
8a. Median area of first two terga very sparsely punctate.	9
b. Median area of first two terga uniformly, densely micropunctate.	11

9a. Median area of third and fourth terga nearly impunctate, similar to first two terga; scutellum very sparsely punctate; HW less than 1.9 mm.	10
b. Median area of third and fourth terga closely and uniformly micropunctate; scutellum abundantly, finely punctate; HW 2.0 mm or more.	<i>semirufus</i>
10a. Frontal lobes closely micropunctate and with scattered coarse punctures; hairs along inner eye margin about as long as on scape; inner face of fore femur with numerous erect hairs along entire length, hairs about as long as those of scape.	<i>koso</i>
b. Frontal lobes sparsely, coarsely punctate; hairs inconspicuous or absent along inner eye margin; when present, shorter than those of scape; inner face of fore femur with few erect hairs, and these on apical half and much shorter than those of scape.	<i>flaviceps</i>
11a. Face, between eye and frontal lobe, with punctures irregularly distributed, with large impunctate areas; vertex usually with conspicuous areas of sparse punctation between ocellus and eye.	12
b. Face, between eye and frontal lobe, uniformly punctate, interspaces usually no more than twice a puncture diameter; vertex with numerous evenly distributed punctures.	<i>kennedyi</i>
12a. Longest hairs of mesoscutum. pleura and second tergum less than MOD, often less than 0.5 X MOD.....	<i>mimicus</i>
b. Longest hairs of mesoscutum equal to EL. longest of pleura slightly exceeding MOD, longest of second tergum about equal to MOD.	<i>nequazcatl</i>
MALES	
1a. Lower margin of ventral lobe of aedeagus strongly convex in profile, teeth small.	2
b. Lower margin of ventral lobe of aedeagus concave or straight in profile, teeth coarse (Fig. 195).	<i>wheeleri</i>
2a. Disc of second tergum moderately to slightly shiny, uniformly micropunctate and pubescent, first and third terga usually similar; mesoscutum dull, densely, uniformly tessellate.	3
b. Discs of first two or three terga polished, impunctate and apubescent, at least in middle; mesoscutum wholly, or in part, polished and shiny	5
3a. Posterior margin of hind wing with fringe hairs along basal half, at least; if fewer, longest occipital hairs less than 0.5 X MOD; HW often less than 0.90 mm.	4
b. Posterior margin of hind wing without fringe hairs; longest occipital hairs at least 0.60, usually 0.75 or more, X MOD; HW in excess of 0.90 mm.	<i>melliger, mendax, placodops</i>
4a. Longest occipital and mesoscutal hairs exceeding MOD; frontal lobes shiny; side of dorsum of first tergum smooth, shiny, with scattered coarse punctures; HW 0.80-0.87 mm.	<i>kathjuli</i>
b. Longest occipital and mesoscutal hairs less than MOD, usually less than 0.5 X MOD; entire face dull, closely tessellate; dorsum of first tergum uniformly, closely micropunctate; HW 0.83-0.97 mm.	<i>semirufus</i>
5a. Posterior margin of hind wing without fringe hairs	6
b. Posterior margin of hind wing with fringe hairs.	8
6a. Longest occipital hairs not less than 0.75 x MOD; second and third terga with or without conspicuous pubescence laterad.	7

- b. Longest occipital hairs not exceeding 0.50 X MOD; second and third terga at sides apubescent or very sparsely pubescent. *kennedyi*
- 7a. Longest occipital and mesoscutal hairs about equal to MOD; first 3 terga with little or no pubescence.*nequazcatl*
- b. Longest occipital and mesoscutal hairs no more than 0.75 x MOD, first 3 terga often conspicuously pubescent laterad (especially Mexican populations). *depilis*
- 8a. Longest occipital and mesoscutal hairs no more than 0.5 x MOD 9
- b. Longest occipital and mesoscutal hairs at least 0.75 x MOD, often equal to MOD. *koso*
- 9a. First three terga without conspicuous appressed pubescence or with apubescent median areas of first and second segments larger than lateral pubescent areas. *mimicus* and *romainei*
- b. First tergum largely apubescent second and third with numerous appressed hairs over a larger area median apubescent area. *flaviceps*

KEY TO SPECIES OF *EREMNOCYSTUS* from; Snelling, 1982. A Revision of the Honey Ants, Genus *Myrmecocystus*,
First Supplement. Bull. So. Calif. Acad. Sci. 8(12): 69-86.

WORKERS (*Myrmecocystus*)

- 1a. Antennal scape and dorsum of propodeum without fully erect hairs.2
- b. Antennal scape, usually, and dorsum of propodeum, always, with some fully erect hairs (propodeal hairs may be short and inconspicuous in *M. perimeces*; this species has an unusually elongate head, CI 70-81). 3
- 2a. Pronotum and mesonotum with at least eight conspicuous, fully erect white hairs; petiolar scale strongly compressed in profile, crest distinctly notched. *lugubris*
- b. Pronotum and mesonotum each with no more than two fully erect hairs; petiolar scale not notably compressed, crest slightly concave or flat, but not conspicuously notched. *creightoni*
- 3a. Scape and/or tibiae, usually both, with conspicuous fully erect hairs; or, head moderately broad, CI 89 or more
..... 4
- b. Scape and tibia without erect hairs and head unusually elongate, CI 70-81.(Northern Baja Calif.)..... *perimeces*
- 4a. Scape with conspicuous erect or semierect hairs; femora and tibiae with abundant erect hairs, some present on dorsal femoral surfaces; petiolar scale variable, but often compressed with summit distinctly notched. 5
- b. Scape with no erect hairs, except at apex; femora and tibiae with few erect hairs, none on dorsal femoral surface; petiolar scale thick in profile, crest flat or slightly convex. *yuma*
- 5a. Scape with scattered erect and numerous suberect to subdecumbent hairs; malar area with fewer than 6 erect hairs in frontal view; if more, pubescence of second tergum much less dense than that of first. 6
- b. Scape with numerous fully erect hairs; malar area with 10+ erect hairs in frontal view and second tergum fully as densely pubescent as first. *hammettensis*
- 6a. Pubescence of second tergum as dense as that of first. 7
- b. Pubescence of second tergum much sparser than that of first.*arenarius*

- 7a. Appressed pubescence abundant on frons and third tergum; petiolar scale thick, at level of spiracle distinctly more than twice the length of the spiracle, crest flat or convex. *colei*
- b. Appressed pubescence sparse on frons and third tergum; petiolar scale thin, at spiracle less than twice the length of spiracle, crest conspicuously notched. *tenuinodis*

FEMALES (*Myrmecocystus*)

- 1a. Mesoscutum, finely, densely and uniformly punctate. 2
- b. Mesoscutal punctation not uniform, punctures often of two sizes, with a large median impunctate area or with widely scattered punctures or with impunctate disc and median longitudinal punctate zone. 3
- 2a. Punctures subcontiguous on side of clypeus, very, coarse, distinctly coarser than those of upper half of mesopleuron; occiput distinctly shiny, with scattered fine punctures; mid and hind femora without fully erect hairs except a few along lower side. *creightoni*
- b. Punctures on side of clypeus distinctly separated, no coarser than on upper half of mesopleuron; occiput slightly shiny, densely shagreened, with fine obscure punctures; mid and hind femora with conspicuous fully erect hairs on all surfaces. *colei*
- 3a. Fourth segment of maxillary palp elongate-clavate, conspicuously broader at apex than at base; parapsis sparsely punctate, punctures irregular in size and spacing, but mostly separated by two or more puncture diameters. 4
- b. Fourth segment of maxillary palp not clavate, about as broad in basal third as in apical third; parapsis with punctures uniform in size and spacing. 6
- 4a. Summit of first gastric tergum and much of discs of second and third shiny and polished, very nearly impunctate; scutellum with extensive nearly impunctate areas on either side of middle. 5
- b. Summit of first gastric tergum and entire discs of second and third terga shiny between fine and evenly spaced piligerous punctures; scutellum with sparse, evenly spaced minute punctures. *tenuinodis*
- 5a. Fifth segment of maxillary palp uniformly broad, not conspicuously narrowed over apical one-half, forewing with numerous fringe hairs along costal margin. *hammettensis*
- b. Fifth segment of maxillary palp conspicuously narrowed over apical one half (Fig. 4); forewing without fringe hairs on costal margin *arenarius*
- 6a. Face with abundant fine punctures between eyes and frontal lobes; clypeus shiny, polished; appressed gastric pubescence whitish; mesopleural hairs about as long as those of mesoscutum. *yuma*
- b. Face sparsely punctate between eye and frontal lobe; clypeus dull, densely sculptured; appressed gastric pubescence brownish; mesopleural hairs conspicuously longer than those of mesoscutum, little shorter than those of scutellum. *perimeces*

KEY TO SPECIES OF *MYRMECOCYSTUS*

WORKERS

- 1a. Dorsal surface of propodeum strongly, angularly projected upward over posterior two-thirds; erect hairs very sparse, with few or none on outer face of hind tibia; upper eye margin little below upper margin of head. 2
- b. Dorsal surface of propodeum either flat or evenly convex; body often abundantly hairy; upper eye margin usually well below upper margin of head. 3

- 2a. With at least two erect pronotal hairs as long as apical breadth of scape; first tergum with a few erect hairs on disc; hind tibia with a few erect hairs on outer face beyond basal third. *ewarti*
- b. Erect pronotal hairs, when present, shorter than apical breadth of scape; first tergum without erect discal hairs; hind tibia without erect hairs on outer face beyond basal third. *pyramicus*
- 3a. Fully erect hairs conspicuous on thoracic dorsum, discs of first and second terga, and on scape and tibiae.4
- b. No erect hairs on thoracic dorsum, discs of first and second terga, scape or tibiae. *christineae*
- 4a. Head, pronotum and gaster with abundant appressed pubescence; mid and hind tibiae usually with numerous erect hairs along apical half of outer face; upper eye margin often distinctly below occipital corner; if metanotal suture impressed, HL exceeds 1.3 mm. 5
- b. Head, pronotum, and gaster shiny, with little or no appressed pubescence; mid and hind tibiae with not more than 3 or 4 erect hairs beyond basal third of outer face, usually none; upper eye margin coincident with occipital corner, metanotal suture deeply impressed and dorsal face of propodeum. Convex. *navajo*
- 5a. Large, highly polymorphic species, HL 1.0-2.0 mm or more, usually in excess of 1.3 mm; metanotal suture usually impressed and propodeum as long as high or longer, juncture of dorsal and posterior faces broadly rounded. 6
- b. Smaller, moderately polymorphic species, HL 0.8-1.4 mm; metanotal suture not impressed; propodeum higher than long, juncture of dorsal and posterior faces abruptly rounded, often subangulate. *testaceus*
- 6a. Eye with numerous erect hairs which are longer than diameter of ocular facets; mandible with 8 or 9 teeth; color uniformly brownish, gaster a little darker. *melanoticus*
- b. Eye with erect hairs, when present, very diffuse, length less than diameter of ocular facets; mandible with 9 or 10 teeth; color usually distinctly yellow, but may be extensively brownish in southern populations.....*mexicanus*

FEMALES (*Myrmecocystus*)

- 1a. Fifth segment of maxillary palp broadest in middle, narrowed basally and apically; hind femur without erect hairs on dorsal surface; hind tibia with hairs decumbent, never fully erect. 2
- b. Fifth segment of maxillary palp broadest well basad of middle, gradually narrowed toward apex or parallel sided; hind femur with erect hairs on dorsal surface; hind tibia with abundant fully erect and suberect hairs. 5
- 2a. Antennal scape with decumbent or appressed hairs only except a few erect hairs at tip; ocelli normal, OD less than 0.12 mm. 3
- b. Antennal scape with conspicuous coarse erect and suberect hairs; ocelli large, OD greater than 0.15 mm. *navajo*
- 3a. Fourth segment of maxillary palp gradually widened from base to apex; fine punctures of parapsis abundant and uniformly spaced; side of frontal lobe shiny between close, fine punctures. 4
- b. Fourth segment of maxillary palp distinctly clavate; fine punctures of parapsis very irregularly spaced; side of frontal lobe dull and roughened between fine punctures which are at least partially obscured.*christineae*
- 4a. Fine punctures of parapsis conspicuously coarser than those of disc of mesoscutum; first tergum with fewer than 6 erect hairs on disc, often none; interocellar distance about equal to ocellocular distance.*pyramicus*
- b. Fine punctures of parapsis not obviously coarser than those of disc of mesoscutum; first tergum with at least 12 erect to suberect hairs on disc; interocellar distance less than ocellocular distance. *ewarti*

5a. Thorax and gaster brown, legs usually yellowish; HW usually less than 1.85 mm; penultimate segment of maxillary palp slender, parallel-sided. *testaceus*

b. Thorax and gaster light brownish yellow to yellow, legs concolorous with thorax; HW 1.90 mm or more; usually more than 2.0 mm; penultimate segment of maxillary palp distinctly broadest basad. *mexicanus*

MALES (*Myrmecocystus*)

1a. Scape and tibia without conspicuous standing hairs; hind wing with fringe hairs on posterior margin. 2

b. Scape always and tibia usually with conspicuous standing hairs; posterior margin of hind wing variable. 4

2a. Forewing with conspicuous fringe hairs along apical margin; HL less than 0.80 mm. 3

b. Forewing without fringe hairs along apical margin; HL in excess of 0.90 mm. *pyramicus*

3a. Mesopleuron shiny, indistinctly, or not at all, shagreened; forewing usually with discoidal cell. *ewarti*

b. Mesopleuron slightly shiny, distinctly shagreened; forewing without discoidal cell. *christineae*

4a. Occipital hairs shorter than maximum diameter of lateral ocellus; posterior and/or apical margins of hind wing with at least a few long fringe hairs. 5

b. Many occipital hairs longer than maximum diameter of lateral ocellus; hind wing without fringe hairs..... *testaceus*

5a. Small species, HW less than 0.9 mm; scape with scattered erect hairs, tibia with numerous decumbent hairs; apical margin of forewing without fringe hairs. *navajo*

b. Large species, HW greater than 0.9 mm; scape and tibia usually with abundant erect or suberect hairs; if erect hairs reduced or absent, apical margin of forewing with at least vestiges of fringe.*mexicanus* and *melanoticus*

***Paratrechina* and *Nylanderia*.**

All but one of the California species in this group have been placed in the genus *Nylanderia*.

Workers

1a. Body color brownish black with bluish iridescence.*Paratrechina*

b. Body color pale without iridescence.*Nylanderia*

***Nylanderia*.**

Workers

1a. Erect setae on femurs numerous.*N. cf terricola*

b. Erect setae on femurs sparse or absent.*N. histrix*

***Paratrechina*.** The genus is represented by one species, *Paratrechina longicornis*, which is an urban pest collected in Indio and El Centro (1979). It is likely more widespread in irrigated areas.

